DESCRIPTION

PERFUME COMPOSITION FOR TEMPERATURE SENSE CONTROL, SENSE CONTROL ARTICLE, SENSE CONTROL METHOD, AND PERFUME MAP

TECHNICAL FIELD

The present invention relates to a perfume composition for temperature sense control, which changes the subjective temperature sense of a person by means of aroma, and to a temperature sense control article that contains this perfume composition, to a temperature sense control method, and to a

BACKGROUND ART

Colors have long been known to affect people's temperature sense, time sense, weight sense, and sense of size. For instance, warm colors such as red, orange, and yellow project a warm or expansive image, and have the effect of changing a person's senses in that direction, whereas cool colors such as black, blue, white, and purple are known to project a cool or contracting image. Meanwhile, it is known that fragrances project sense images such as sweet, thick, transparent, or bracing, and that fragrances can arouse emotions, impart a pleasurable feeling, relieve stress, improve work efficiency, and have other such effects. For example, Japanese Laid-Open Patent Application 2001-49286 discloses an invention related to a perfume component that eases stress caused by lack of sleep. Nevertheless, there has been no research into the relationship between aroma and temperature sense, and it has never once been proposed up to now that temperature sense could be changed by

aroma.

Patent Document: Japanese Laid-Open Patent Application 2001-049286

DISCLOSURE OF THE INVENTION

It is an object of the present invention to discover that a perfume can change a person's temperature sense, to identify a perfume component that can change temperature sense, and to provide a perfume composition for controlling temperature sense that contains this perfume component, and to a sense control method or sense control article such as an aromatic or a cosmetic that is beneficial for controlling temperature sense, and to a perfume map or a method for selecting a perfume suited to controlling temperature sense.

The first invention is a perfume composition for temperature sense control, containing a perfume component that changes the temperature subjectively sensed by a person (temperature sense), wherein this composition contains a perfume component that raises the temperature subjectively sensed by a person (temperature sense), or a perfume component that lowers the temperature subjectively sensed by a person (temperature sense).

The perfume component that changes the temperature sense is a perfume component identified on the basis of a temperature image obtained from test subject assessment, and the scent of the overall perfume composition is [that of] a perfume composition identified on the basis of a temperature image

obtained from a test subject.

The second invention is an article for controlling temperature sense and/or usability/skin feel, containing the above-mentioned perfume composition and used to change the temperature sense and/or usability/skin feel of an article.[1] An example is a cosmetic for controlling temperature sense and/or usability/skin feel, which changes the temperature sense and/or usability/skin feel of a cosmetic.

The third invention is a method for controlling temperature sense and/or usability/skin feel, wherein temperature sense and/or usability/skin feel is changed by having a person smell the above-mentioned perfume component. An example is when the temperature sense and/or usability/skin feel [experienced by] a person within a specific space is changed by releasing the perfume composition within this space.

The fourth invention is a method in which an image of the aroma perceived when a person smells a perfume component and/or perfume composition is obtained by positioning a specific perfume component and/or perfume composition, on the basis of the aroma image, on a coordinate plane (map) having X and Y axes, with the X axis having "tender" (mild, sweet) and "sharp" (bracing) at opposite ends, and the Y axis having "natural" (transparent, bright) and "rich" (thick, sultry) at opposite ends, and [how much] the temperature sense and/or usability/skin feel is changed by this perfume component and/or perfume composition is estimated from the position on the map.

The fifth invention is a perfume map with which an image of the aroma perceived when a person smells a perfume component and/or perfume composition is obtained by positioning a specific perfume component and/or perfume composition, on the basis of the aroma image, on a coordinate plane (map) having X and Y axes, with the X axis having "tender" (mild, sweet) and "sharp" (bracing) at opposite ends, and the Y axis having "natural" (transparent, bright) and "rich" (thick, sultry) at opposite ends, and [how much] the temperature sense and/or usability/skin feel is changed by this perfume component and/or perfume composition is estimated from the position on the map.

The perfume component that raises the temperature sense is a component selected from the group composed of vanillin, 4-tert-butyl-α-methylhydrocinnamic aldehyde, heliotropine, 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopentabenzopyran, γ-undecalactone, β-ionone, cumin oil, lavender oil, clove oil, 3α,6,6,9α-tetramethyldodecahydronaphtho[2,1-b]furan, and maltol.

The perfume component that lowers the temperature sense is a component selected from the group composed of peppermint oil, bergamot oil, spearmint* oil, lime oil, 7-methyl-3,4-dihydro-(2H)-1,5-benzodioxepin-3-one, chamomile oil, 2,4-dimethyl-3-cyclohexenyl carboxyaldehyde, majolaine oil, patchouli oil, jasmine absolute, sandalwood oil, geranium oil, rose oil, and methyl-N-3,7-dimethyl-7-hydroxyoctylidene-anthranilate.

The sixth invention is a method wherein the moisture content of skin is increased by having a person smell the a above-mentioned perfume component or perfume composition that raises the temperature sense, or the sebum content of skin is reduced by having a person smell the above-mentioned perfume component or perfume composition that lowers the temperature sense.

With the present invention, it is possible to identify a perfume component and perfume composition that can change temperature sense, and to change and control temperature sense by means of an aroma given off by a perfume component. Also, it is possible to easily and reliably select a perfume component and perfume composition capable of changing temperature sense on the basis of a temperature image obtained from a test subject. Also, it is possible to change and control the temperature sense and/or usability/skin feel [experienced by] a person in a space in which the user or aroma is present, by using an article, cosmetic, or the like containing the perfume composition for temperature sense control of the present invention. Furthermore, it is possible to estimate the temperature sense and/or usability/skin feel that can be changed by a perfume component and/or perfume composition by utilizing a perfume map.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagram illustrating a method for verifying the change in temperature sense brought about by aroma with a

cream;

FIG. 2 is a graph of the relationship between cream temperature sense brought about by aroma and the "freshness[2] of the skin";

FIG. 3 is a graph of the relationship between cream temperature sense brought about by aroma and the "moistness of the skin";

FIG. 4 is a diagram of a perfume map;

FIG. 5 is a graph of the relationship between aroma and space temperature sense;

FIG. 6 is a conceptual diagram of an experimental apparatus for confirming the difference in temperature sense brought about by aroma within a space;

FIG. 7 is a graph of the assessment of temperature sense in this experimental apparatus; and

FIG. 8 is a graph of the assessment of the intensity of aroma in this experimental apparatus.

BEST MODE FOR CARRYING OUT THE INVENTION

Preferred embodiments of this invention will now be described in detail. This invention identifies a perfume component that can change a person's temperature sense by aroma, and provides a perfume composition for controlling temperature sense that contains this perfume component, and also involves preparing an article for controlling temperature sense that contains this perfume composition, and to controlling temperature sense by volatilizing this perfume composition.

Also, it involves utilizing a perfume map to allow the desired perfume for controlling temperature sense to be selected easily and reliably.

As a result of various research, the inventors discovered that the aroma given off by a specific perfume component can change the temperature subjectively sensed by a person (temperature sense). 12 test subjects put there hands into water held at a constant temperature, and the subjectively sensed temperature of the water was assessed on a seven-point scale in which 7 was hot, 6 was warm, 5 was somewhat warm, 4 was "can't say," 3 was somewhat cold, 2 was cold, and 1 was extremely cold. The same 12 test subjects were asked to smell a peppermint aroma while once again putting their hands into water held at a constant temperature, and the subjectively sensed temperature of the water was assessed on a seven-point scale. The same experiment was repeated by raising the water temperature one degree at a time, and the testers looked for the temperature at which the assessment given under conditions of smelling the peppermint aroma was the same as the assessment given under conditions of no aroma at 28°C. As a result, the average value for the assessment when hands were put in water adjusted to 28°C was 4.8 ("somewhat warm") under conditions of no aroma, and 3 ("somewhat cold") under conditions of smelling the aroma. When the water temperature was raised to 32°C, the assessment was 4.7 ("somewhat warm") under conditions of

smelling the aroma, and it was found that the assessment of 4.8 ("somewhat warm") with 28°C water under conditions of no aroma was substantially the same as the assessment with 32°C water under conditions of smelling peppermint. Specifically, the aroma of peppermint was found to change the temperature sense by approximately 4°C.

Also, to examine the change in temperature sense with and without aroma, the 12 test subjects put their hands in water with a temperature of 28°C, and the subjectively sensed temperature was assessed on a seven-point scale in the same manner as above. When there was no aroma, the assessment was 5.25 ("somewhat warm"), but under conditions of smelling the aroma of L-carvone, which is the main component of spearmint, the assessment was 4 ("can't say"). Further, the same experiment was conducted under conditions of smelling the aroma of L-menthol, which is the main component of peppermint. Under conditions of no aroma, the assessment was 4.63 ("somewhat warm"), and with an aroma, the assessment was 4.125 ("can't say"). These experiments revealed that even with the same 28°C water, how warm the water felt under conditions of no aroma differed slightly with the experiment.

Next, to identify the perfume components capable of changing the temperature sense of a person for the 24 typical types of perfume discussed below, a plurality of test subjects were asked to smell specific aromas and assess the temperature

image of the aroma on a seven-point scale in which 7 was very warm, 6 was warm, 5 was somewhat warm, 4 was "can't say," 3 was somewhat cold, 2 was cold, and 1 was very cold. A survey was taken by selecting 17 or 18 women 20 to 24 years of age for each perfume component of the 24 types of raw material perfume, strips of odor paper were sprayed with the raw material perfumes, and these were given to the survey respondents.

As shown in FIG. 1, the temperature sense for a cosmetic brought about by aroma was compared with the usability/skin feel with and without an aroma, for the 24 typical types of perfume discussed below, and an assessment was made versus no aroma. Just as with the survey conducted for temperature sense above, 17 or 18 women 20 to 24 years of age were selected for this test, cotton to which no perfume had been applied was affixed to one arm, and cotton to which perfume had been applied was affixed to the other arm, the arms were each coated with an unscented cream while the subjected smelled the aroma of the cotton, and the subjectively sensed temperature of the cream was assessed on a five-point scale in which 5 was warm, 4 was somewhat warm, 3 was "can't say," 2 was somewhat cold, and 1 was cold.

The 24 types of raw material perfume were vanillin, 4-tert-butyl-α-methylhydrocinnamic aldehyde, heliotropine, 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopentabenzopyran, γ-undecalactone, β-ionone, cumin

oil, lavender oil, clove oil, 3α,6,6,9α-tetramethyldodecahydronaphtho[2,1-b]furan, peppermint oil, bergamot oil, spearmint oil, lime oil, 7-methyl-3,4-dihydro-(2H)-1,5-benzodioxepin-3-one, chamomile oil, 2,4-dimethyl-3-cyclohexenyl carboxyaldehyde, majolaine oil, patchouli oil, jasmine absolute, sandalwood oil, geranium oil, rose oil, and methyl-N-3,7-dimethyl-7-hydroxyoctylidene-anthranilate.

Factor analysis was performed on the assessment results obtained from a plurality of test subjects in the above experiments, and the result was that there is a positive correlation between the temperature image (warm) of an aroma and the subjectively sensed temperature (warm), and the correlation coefficient was 0.67. Thus, it is possible to easily and reliably select a perfume component and a perfume composition capable of changing temperature sense on the basis of the temperature image obtained from a plurality of test subjects as above. Furthermore, the effect of the aroma is the same not only for the perfume component, but for the fragrance of the perfume composition as a whole.

The above experiments also revealed that perfume raw materials having a warm temperature image, and raw material perfumes capable of raising temperature sense were vanillin, 4-tert-butyl-α-methylhydrocinnamic aldehyde, heliotropine, 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopentabenzopyran, γ-undecalactone, β-ionone, cumin

oil, lavender oil, clove oil, 3α,6,6,9α-tetramethyldodecahydronaphtho[2,1-b]furan, and maltol. A syrup perfume, chocolate perfume and coconut perfume also can raise temperature sense.

Conversely, perfume raw materials having a cool temperature image, and raw material perfumes capable of lowering temperature sense were peppermint oil, bergamot oil, spearmint oil, lime oil, 7-methyl-3,4-dihydro-(2H)-1,5-benzodioxepin-3-one, chamomile oil, 2,4-dimethyl-3-cyclohexenyl carboxyaldehyde, majolaine oil, patchouli oil, jasmine absolute, sandalwood oil, geranium oil, rose oil, and methyl-N-3,7-dimethyl-7-hydroxyoctylidene-anthranilate. Furthermore, the effect of the aroma is the same not only for the perfume component, but for the fragrance of the perfume composition as a whole.

These 24 different perfume raw materials are nothing more than examples, and the present invention is not limited to or by these 24 types. The present invention identifies a perfume component that can change temperature sense, and is designed to be used as a perfume composition that contains this perfume component and is for controlling the temperature sense of a person, and even with other perfume raw materials besides the 24 types discussed above, the present invention encompasses perfume components that can change temperature sense and are identified on the basis of a temperature image obtained from test subject assessment. Also, the perfume map discussed below

allows a person's impression of the aroma of a perfume to be utilized to evaluate the temperature sense, as well as the usability/skin feel, of perfume raw materials whose temperature sense is unknown, and the present invention also encompasses perfume raw materials thus evaluated and identified.

Next, the correlation of aroma-induced cosmetic temperature sense, usability, and how the cosmetic actually felt on the skin, and the correlation with the image of the aroma were tested for the above-mentioned 24 different raw material perfumes. As shown in FIG. 1, the test method for a cream involved comparing the aroma-induced temperature sense, usage feel of the cream, and skin feel with those obtained without any aroma. The aroma image was assessed on a seven-point scale from 0 to 6, while the usability/skin feel was assessed on a five-point scale from 5 ("I agree") to 1 ("I disagree"). In addition to assessing usability, the impression of the aroma of the perfume was also assessed at the same time. To prevent the perfume from modifying the cream, a method was employed in which the perfume component was not directly added to the cream, but was instead applied to the cotton and smelled.

The following wording was selected for usability/skin feel.

How well a cream spreads: light to heavy

Absorption into the skin: fast to slow

Makes the skin look youthful?: yes to no

Makes the skin feel sticky?: yes to no

Makes the skin feel fresh?: yes to no

Makes the skin feel moist?: yes to no

Makes the skin feel non-sticky?: yes to no

Makes the skin feel smooth?: yes to no

Makes the skin feel supple?: yes to no

Makes the skin feel tight?: yes to no

Each of these was assessed on a five-point scale.

For impressions of aroma, words that readily express the characteristics of an aroma, and four different words (natural, rich, tender, and sharp) were selected as generic terms from among sensory adjectives and emotional adjectives used to express the five senses. Each generic term encompasses specific aroma impression words. For example, "natural" encompasses impression expressions such as transparent, bright, natural,[3] pure, etc.; "rich" encompasses thick, sultry, mature, glossy, sexy, etc.; "tender" encompasses mild, sweet, gentle, graceful, etc; and "sharp" encompasses bracing, sharp, cool, etc. The impression of these words for aromas were evaluated on a seven-point scale from 0 (do not feel at all) to 6 (strongly feel). However, the words used to express usability/skin feel and the words used to express impressions of aroma are nothing more than examples, and [the present invention] is not limited to or by these words. In particular, the aroma assessment terms disclosed in Japanese Laid-Open Patent Application 2001-174450 can be employed as words for expressing aroma impressions.

Table 1 gives average values for the assessment of aroma

images and usability/skin feel, and the change in the temperature sense of a cream produced by aroma, for eight types of typical perfume raw material. FIG. 2 is a graph of the relationship between the change in cream temperature sense brought about by aroma and the "freshness of the skin." FIG. 3 is a graph of the relationship between temperature sense and the "moistness of the skin." It can be seen from Table 1 and FIGS. 2 and 3 that a cream having an aroma that is sensed to be cold gives a greater sense of skin freshness, non-stickiness, and tightness than an unscented cream, while a cream having an aroma that is sensed to be warm gives a greater sense of skin moistness and smoothness than an unscented cream. Thus, it will be understood that a cosmetic containing a perfume component capable of controlling temperature sense will be able to change the usability/skin feel by its aroma, so it is possible to control the usability/skin feel of a cosmetic by means of aroma. In Table 1, A is peppermint, B is 4-tert-butyl-α-methylhydroxycinnamic aldehyde, C is vanillin, D is majolaine, E is 2,4-dimethyl-3-cyclohexenyl carboxyaldehyde, F is cumin, G is γ-undecalactone, and H is lime.

Table 1

	Aroma image words						
	Transparent	Bright	Thick	Sultry	Mild	Sweet	Bracing
A	3.6	3.6	2.5	2.1	1.8	1.9	4.6
B	3.8	3.8	2.2	2.1	3.6	3.6	2.8
C	2.0	3.6	3.8	3.2	4.5	4.9	1.2
D	1.9	2.6	3.7	2.6	1.9	1.4	4.1
E	3.2	3.1	2.1	1.6	2.5	2.6	2.9
F	1.5	2.1	4.0	3.1	2.6	1.9	1.9
G	2.6	4.1	2.9	2.1	3.9	4.3	1.5
H	3.4	4.2	2.8	2.1	1.9	1.7	4.5

Table 1 (cont.)

	Usability/Skin Feel							
	Cream temp. sense (cold)	Skin tight-ness	Skin freshness	Skin suppleness	Non-stickiness of skin	Cream temp. sense (warm)	Skin smoothness	Skin moistness
A	4.3	4.1	3.6	3.9	3.1	1.7	3.2	2.9
B	2.6	3.3	3.2	3.4	2.5	3.4	3.8	3.9
C	1.9	2.5	1.9	2.7	2.2	4.1	3.9	4.1
D	3.4	3.2	3.4	3.1	2.8	2.6	3.5	3.4

E	3.5	2.4	3.1	3.4	2.6	2.5	3.8	3.3
F	2.9	2.7	2.1	3.1	2.4	3.1	3.0	3.5
G	2.8	2.9	3.4	3.2	3.0	3.2	3.9	3.7
H	3.7	3.6	3.5	3.6	3.2	2.3	3.4	3.2

Table 1 (cont.)

	Usability/Skin Feel							
	Cream spreading (light)	Absorption into skin	Youthfull-ness of skin	Stick-iness of skin	Cream spreading (heavy)	Thick-ness of cream	Plump-ness of skin	Firmness of skin
A	3.5	3.7	3.7	3.0	2.5	2.3	2.3	3.0
B	3.8	3.5	3.8	3.1	2.2	2.5	2.2	2.9
C	2.9	3.2	3.2	2.5	3.1	2.8	2.8	3.5
D	3.5	3.3	3.2	3.2	2.5	2.7	2.8	2.8
E	3.3	2.9	3.7	3.2	2.7	3.1	2.3	2.8
F	2.9	2.9	2.7	2.5	3.1	3.1	3.3	3.5
G	3.8	3.9	3.9	3.1	2.2	2.1	2.1	2.9
H	3.7	3.2	3.6	2.9	2.3	2.8	2.4	3.1

In Table 2, the temperature sense and usability/skin feel that change with aroma are classified by factor analysis into "moist-fresh (factor 1)" and "spreading-absorption (factor 2)", and the correlation is looked at by factor load. It can be seen from Table 2 that (i) the moist skin feel and fresh skin

feel that change with aroma are at opposite ends of the spectrum, (ii) lightness of spreading and heaviness of spreading are at opposite ends of the spectrum, and (iii) the moist-fresh axis and the spreading lightness-heaviness axis are in a perpendicular relationship.

Table 2

		Factor 1 moist-fresh	Factor 2 spreading-absorption
1	Moistness of skin	0.914	0.114
	Warmth or coolness of cream	0.886	-0.097
	Smoothness of skin	0.800	0.367
2	How well the cream spread	-0.087	0.899
	Youthfulness of skin	-0.021	0.713
	Absorption into the skin	-0.055	0.702
	Non-stickiness of skin	-0.543	0.612
3	Stickiness of skin	-0.324	0.494
	Freshness of skin	-0.739	0.476
	Suppleness of skin	-0.783	0.354
	Tightness of skin	-0.774	0.457
	Contribution (%)	40.3	28.6
	Cumulative contribution	40.3	68.9

(%)		

Table 3 shows the correlation coefficients for aroma image and the temperature sense and/or usability/skin feel that changes with the aroma. It can be seen from Table 3 that an aroma that makes the skin feel fresh scores high in terms of being bright, transparent, and bracing, and scores low in terms of being mild, sweet, and thick. An aroma that makes the skin feel moist scores high in terms of being mild and sweet, and low in terms of being bracing. An aroma that gives the sense of light spreading and quick absorption scores high in terms of being bright and transparent, and low in terms of being thick.

Table 3

		Fresh (X axis -)				Moist (X axis +)			Light spreading, fast absorption (Y axis +)			
		Skin freshness	Non-stickiness of skin	Skin suppleness	Skin tightness	Skin moisture	Skin smoothness	Cream warmth	Skin youthfulness	Cream spreading	Absorption into skin	Skin stickiness
Im-pres-sion	Mild	-0.46	-0.30	-0.49	-0.46	0.79	0.73	0.79	0.17	0.17	0.25	-0.05
	Sweet	-0.35	-0.26	-0.41	-0.40	0.69	0.70	0.71	0.29	0.21	0.36	-0.03
	Bright	0.43	0.53	0.41	0.48	0.02	0.33	-0.08	0.69	0.73	0.57	0.47

of aroma	Trans-parent	0.58	0.49	0.66	0.63	-0.25	0.06	-0.42	0.68	0.62	0.34	0.36
	Bracing	0.71	0.57	0.77	0.80	-0.78	-0.55	-0.82	0.14	0.23	0.05	0.38
	Thick	-0.26	-0.27	-0.24	-0.17	-0.06	-0.30	0.21	-0.68	-0.48	-0.27	-0.16
	Sultry	0.63	-0.50	-0.67	-0.53	0.26	-0.01	0.44	-0.57	-0.55	-0.20	-0.45

Since the correlation shown in Tables 1 to 3 and FIGS. 2 and 3 exists between the aroma image and temperature sense and usability/skin feel, we can obtain the coordinate plane (map) shown in FIG. 4. FIG. 4 shows a perfume map with which an image of the aroma perceived when a person smells a perfume component and/or perfume composition is obtained by positioning a specific perfume component and/or perfume composition, on the basis of the aroma image, on a coordinate plane (map) having X and Y axes, with the X axis having "tender" (mild, sweet) and "sharp" (bracing) at opposite ends, and the Y axis having "natural" (transparent, bright) and "rich" (thick, sultry) at opposite ends, and [how much] the temperature sense and/or usability/skin feel is changed by this perfume component and/or perfume composition is estimated from the position on the map.

As described in relation to FIG. 1, since the warm-cold impression of an aroma is positioned on the same axis as temperature sense, the X axis of the perfume map in FIG. 4 is the axis of temperature sense that changes with aroma, with "warm" on the right end and "cold" on the left end. The X axis is also the axis of "fresh-moist" for usability/skin feel, with "moist (skin feels soft, skin is moist)" on the right end, and "fresh (skin feels nicely tight, skin feels fresh, skin feels supple, and skin feels non-sticky)" on the left end.

In contrast, the Y axis is the aroma impression axis, with

the top end being "natural" and the bottom end "rich," and at the same time, the Y axis is the axis of usability/skin feel indicating whether spreading is light or heavy, with the top end being "light spreading (fast absorption into the skin, skin looks youthful, skin is not sticky)", and the bottom end "heavy spreading (cream is thick, skin is plump, skin is firm)." This Y axis is not correlated to temperature sense.

By assessing the aroma impression of the perfume component or the perfume composition as a whole by the above method, and positioning it on a map such as that shown in FIG. 4, it is possible to determine perfumes that change temperature sense, as well as usability/skin feel including skin smoothness, skin moistness, skin tightness, skin suppleness, and non-stickiness of skin, and the extent of the effect of these perfumes, from the position on the X axis of this map. From the position on the Y axis can be determined perfumes that change usability/skin feel including cream spreading, absorption into the skin, skin youthfulness, skin stickiness, cream thickness, skin plumpness, and skin firmness, and the extent of the effect of these perfumes. Thus, the use of such a map makes it possible to estimate the temperature sense and/or usability/skin feel that can be changed by almost any perfume component or perfume composition, and to easily and reliably select a perfume having the desired effect.

Examples of perfume raw materials that give the perception

of the above-mentioned moist usability/skin feel include vanillin, 4-tert-Butyl-α-methylhydrocinnamic aldehyde, heliotropine, 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopentabenzopyran, γ-undecalactone, β-ionone, cumin oil, lavender oil, clove oil, and 3α,6,6,9α-tetramethyldodecahydronaphtho[2,1-b]furan. Examples of perfume raw materials that give the perception of the above-mentioned fresh usability/skin feel include peppermint oil, bergamot oil, spearmint oil, lime oil, 7-methyl-3,4-dihydro-(2H)-1,5-benzodioxepin-3-one, chamomile oil, 2,4-dimethyl-3-cyclohexenyl carboxyaldehyde, majolaine oil, patchouli oil, jasmine absolute, sandalwood oil, geranium oil, rose oil, and methyl-N-3,7-dimethyl-7-hydoroxyoctylidene-anthranilate. These coincide with the above-mentioned perfume raw materials that give a warm temperature sense and a cold temperature sense.

Examples of perfume raw materials that give the perception of heavy-spreading usability/skin feel include cumin oil, patchouli oil, clove oil, jasmine absolute, methyl-N-3,7-dimethyl-7-hydoroxyoctylidene-anthranilate, and vanillin, and examples of perfume raw materials that give the perception of light-spreading usability/skin feel include γ-undecalactone, 4-tert-butyl-α-methylhydrocinnamic aldehyde, heliotropine, rose oil, 7-methyl-3,4-dihydro-(2H)-1,5-benzodioxepin-3-one, lime oil, geranium oil, chamomile oil, bergamot oil, peppermint oil, β-

ionone, majolaine oil, 4,6,6,7,8,8-hexamethyl-1,3,4,6,7,8-hexahydrocyclopentabenzopyran, lavender oil, 2,4-dimethyl-3-cyclohexenyl carboxyaldehyde, spearmint oil, and 3α,6,6,9α-tetramethyldodecahydronaphtho[2,1-b]furan.

Also, it is possible to change the temperature sense of a person located in a specific space by dispersing in that space, by volatilization or another such means, a perfume composition containing the above-mentioned perfume component capable of changing a person's temperature sense, and having the person smell the aroma. To test this, a clear box containing scented paper and another clear box containing unscented paper were readied, and an experiment was conducting by having a test subject put his or her face into each of the boxes and compare the temperature sense of the space. The difference from no aroma was assessed on a seven-point scale in which 7 was much colder, 6 was colder, 5 was somewhat colder, 4 was "can't say," 3 was somewhat warmer, 2 was warmer, and 1 was much warmer. 12 women 20 to 24 years of age participated in this experiment, using peppermint and vanillin, at a room temperature of 23 degrees and a humidity of 46%. FIG. 5 is a graph of the assessment results, and it can be seen that the temperature sense of a person located in a space can be changed by aroma. When the perfume composition is dispersed in the space so that the person will smell it, the concentration of the aroma is preferably about 0.01 to 10 ppm.

With peppermint oil, for instance, about 0.4 ppm is favorable.

As shown in FIG. 6, two clear boxes 1 and 2 were readied, the perfume component 4 inside a perfume box 3 was pumped by an air pump 5 into one of the boxes [1], and no aroma at all was pumped into the other box 2. The test subject put his or her face into first one box and then the other and compared the temperature sense of the space. This experiment was conducted for three different aromas, namely, peppermint, bergamot, and vanillin. A lid 6 that could be opened and closed was provided to the top of each of the boxes 1 and 2. The test subjects and experiment conditions were the same as discussed above. These results are given in FIGS. 7 and 8. FIG. 7 is a graph of the assessment of the sense of warmth or cold inside the boxes, and shows that the temperature sense perceived by the face changes with the aroma. For example, peppermint gave a cold sensation, and the higher was the concentration, the stronger was the assessment of cold. Vanillin, meanwhile, gave a warm sensation, and the higher was the concentration, the stronger was the assessment of warmth. Bergamot gave a cold sensation, but this cold sensation was assessed as being stronger when the concentration was not too high, and it can be seen that the effect is less likely to be obtained if the concentration of the aroma is too high, and a suitable temperature sense will be obtained at just the right concentration. FIG. 8 is a graph of

the assessment of the aroma intensity inside the box, as a function of concentration.

It is also possible to impart to a person inside a specific space a warm or cold sensation that is changed from that of the external space by dispersing a specific aroma into that space by means of a dehumidifier, humidifier, fan, air conditioner, or the like internally equipped with an aromatic liquid container designed to allow the aromatic liquid to be discharged. The means for dispersing the aroma is not limited to the above, and a filter impregnated with an aromatic may be removably attached to the discharge opening of the above-mentioned air conditioner or the like. The cold-sensation perfumes 1 to 4 and warm-sensation perfumes 1 to 4 discussed below are favorable as this aromatic, but the present invention is not limited to these.

The experiment discussed below revealed that with a perfume capable of changing temperature sense, an aroma that raises the temperature sense has the effect of increasing the moisture content of the skin, while an aroma that lowers the temperature sense has the effect of reducing the sebum content of the skin.

Experimental Methodology

12 female test subjects 20 to 24 years of age were asked to wash their face and attach a piece of scented cotton under their nostrils, which was left alone for a few minutes at a room temperature of 23 degrees and a humidity of 46%, after which the

moisture content (corneometer) and sebum content (sebumeter) of the cheeks were measured. These results are given in Table 4.

Table 4

Aroma that gives a warm sensation

	No aroma	Vanillin	
Sebum content	no difference attributable to aroma		
Moisture content	66.2	69.3	(increase)

Aroma that gives a cold sensation

	No aroma	Peppermint	
Sebum content	29.7	21.8	(decrease)
Moisture content	no difference attributable to aroma		

Working Examples 1 to 9 will now be given, which are specific examples of cosmetics in which the present invention is applied in an attempt to change usability, skin feel and so forth. The specific compositional components of the cold-sensation perfumes 1 to 4 and warm-sensation perfumes 1 to 4 added to the cosmetics in Working Examples 1 to 9, and the proportions in which these components were contained, are listed below.

Cold-sensation perfume 1

Components	Amount contained
Dipropylene glycol	3.7

Dihydromyrcenol	200	
Borneol	1	
Precyclemon B (IFF)	15	
Basil oil	1	
Dynascone 10	2	
Rosemary oil	130	
Juniper berry oil	130	
Peppermint oil	300	
Rose oxide		0.3
Mandarinal	1	
Ambroxan	15	
Cyclogalbanate	20	
Triplal	2	
Dimetol	5	
Lemon oil	40	
Clary sage oil	2	
Galbanum oil	2	
Lavender oil	25	
Bergamot oil	100	
Hexyl salicylate	5	
Total	1000	

Cold-sensation perfume 2

Components	Amount contained

Dipropylene glycol		8
Menthone		50
Isomenthone		50
Shinus molle oil		10
Rosemary oil		300
Cardamon oil		2
Juniper berry oil		130
Peppermint oil		400
Lime distilled oil		50
	Total	1000

Cold-sensation perfume 3

Components	Amount contained
Ambroxan	15
Amyl salicylate	3
Basil oil	1
Bergamot oil	80
Clary sage oil	2
Cypress oil	10
Damascone alpha	2
Dihydromyrcenol	200
2,6-dimethylheptanol (dimetol (GIV))	5
Dynascone 10 (FIR)	1
Evernyl (GIV)	5

Galbanum oil	0.7
Geranium oil	10
Hedione	60
Helional	1
Hexyl acetate	1
Triplal	1
Hydroxycitronellal	10
Iso-E-Super	30
Isoborneol	1
Isogalbanate	20
Juniperberry oil	10
Lavandin oil	30
Lemon oil	30
Vertfix coeur (IFF)	100
Linalool	25
Linalyl acetate	100
Lyral	10
Mandarin aldehyde	0.5
Mandarin oil	5
Menthol	10
Methyl anthranilate	0.1
Methyl ionone gamma	15
Methyl naphthyl ketone beta	1
Nerolin bromilia	1

Peppermint oil America rect.	100
Pine needle oil	2
Precyclemon b (IFF)	10
Rose oxide L	0.1
Rosemary oil	5
Sandalore	2
Sandranol	1
Tonalide	20
Dipropylene glycol	15
Floralozone (IFF)	1
Meronal (GIV)	0.5
Calone	3
Cis-3-hexenyl acetate	1
Cis-3-hexenol	1
1,8-cineol	30
Camphor	5
Methyl pamplemousse	2
Peonile	0.1
Allyl amyl glycolate	5
Total	1000

Cold-sensation perfume 4

Components	Amount contained
Methy dihydrojasmonate	300

Lilial		50
Galaxolide(50% BB)		50
Linalool		50
Menthol		200
Linalyl acetate		50
Ambroxan(10% DPG)		20
Peppermint		60
Green base		10
Helional		10
Triethyl citrate		100
Bergamot		100
	Total	1000

Warm-sensation perfume 1

Components	Amount contained
Dipropylene glycol	89.4
Hedione	300
Hexyl cinnamic aldehyde	50
Lilial	30
Iso-E-Super	100
Galaxolide	30
Indole	0.2
Phenyl ethyl alcohol	35
Phenylacetaldehyde	0.1

Beta-ionone	20
Eugenol	3
Florosa (Quest)	50
Givescone (GIV)	1
Tagete oil	1
Basil oil	5
Prunella (FIR)	1
Ambroxan	5
Bacdanol (IFF)	10
Undecalactone gamma	0.2
Jasmal (IFF)	10
Ethyl linalool	100
Sandalore (GIV)	60
Orange oil	5
Manzanate (Quest)	0.1
Ethyl vanillin	2
Cyclopentadecanone	2
Citronellol	30
Geraniol	25
Geranyl acetate	10
Vanillin	10
Methyl ionoe gamma	15
Total	1000

Warm-sensation perfume 2

Components	Amount contained
Orange oil	15
Linalyl acetate	10
Ethyl linalool	35
Styrallyl acetate	1
Citronellol	10
Florosa (Quest)	20
Nerol	2
DPG	[*sic*]
Methyl ionone gamma	25
Alpha-ionone	2
Geraniol	7
Cedryl methyl ether	5
Polysantol (FIR)	15
Iso-E-Super (IFF)	200
Lilial	15
Anbroxan	10
Bacdanol	70
Canthoxal	10
Heliotropine	10
Pentalide	10
Cis-3-hexenyl salicylate	20
Hedione	250

Habanolide	25
Galaxolide	100
Exaltenone (fir)	15
Ambrettolide	3
Coumarine	5
Lyral	40
Vanilline	10
Ethylene brassylate	50
Raspberry ketone	10
Total	1000

Warm-sensation perfume 3

Components	Amount contained
Hedione	80
Hexyl cinnamic aldehyde	200
Lilial	30
Indole	0.5
Linalool	30
Phenyl ethyl alcohol	80
Benzyl acetate	120
Linalyl acetate	40
Phenyl ethyl phenyl acetate	4
Polysantol (F)	20
Phenylethyl acetate	2

Phenylethyl isobutyrate	2
Benzyl benzoate	40
Dimthyl phenylethyl carbinol	20
Vertenex (IFF)	2
Helional (IFF)	60
Vertofix coeur (IFF)	30
Isobutyl quinoline	0.5
Heliotropine	3
Geranium oil	10
Patchouli oil	10
Cyclamen aldehyde	2
Ethyl vanillin	10
Gamma-decalactone	20
Ylang ylang oil #2	4
Benzyl alcohol	4
Citronellol	30
Geraniol	20
Geranyl acetate	20
Methyl anthranilate	40
Evernyl (GIV)	4
Methyl ionone gamma	20
Cedar wood oil	20
Cinnamic alcohol	10
Phenyl ethyl salicylate	2

Sandalwood oil		10
	Total	1000

Warm-sensation perfume 4

Components	Amount contained
Methyl dihydrojasmonate	200
Iso-E-Super	100
Galaxolide (50% BB)	200
Linalool	30
Linalyl acetate	20
Beta-ionone	50
Orange oil	30
Milk lactone	100
Ethyl acetate(10% DPG)	20
Ald. C_{12} kauric (50% BB)	5
Triethyl citrate	125
Ethyl vanillin	20
ak moss	100
Total	1000

Working Example 1

Astringent lotion

Ethanol	40
Dipropylene glycol	1

Polyoxyethylene polyoxypropylene decyl tetradecyl ether	0.1
Cinnamic anhydride	1
Salicylic acid	0.1
Sodium citrate	0.2
Zinc paraphenolsulfonate	0.2
Dipotassium glycyrrizinate	0.1
Pyridoxine hydrochloride	0.1
L-menthol	0.05
Trisodium HEDTA	0.05
Cellulose powder	1
Bentonite	0.8
Cold-sensation perfume 1	0.002
Purified water	balance

Working Example 2

Sun block cream

Decamethylcyclopentanesiloxane	20
Trimethylsiloxysilicic acid	1
Polyoxyethylene-methylpolysiloxane copolymer	2
Dipropylene glycol	4
Squalane	5
Silicone-covered titanium oxide microparticles	10

Talc (hydrophobically treated)	6
Paraben	appropriate amount
Phenoxyethanol	appropriate amount
Trisodium edetate	0.02
4-t-butyl-4'-methoxydibenzoylmethane	0.1
2-ethylhexyl p-methoxycinnamate	7
Glyceryl mono-2-ethylhexanoate di-p-methoxycinnamate	0.5
Spherical polyethylene powder	5
Dimethyldistearylammonium hectorite	1
Cold-sensation perfume 2	0.05
Purified water	balance

Working Example 3

Gelled aromatic

A. Main aqueous part	
Gellan gum	1
edetate	0.05
water	balance
B. Electrolyte part	
Water	10
Triethylamine hydrochloride	1
C. Alcohol part	
Ethanol	10

Phenoxyethanol	0.3
Polyoxyethylene hydrogenated castor oil	5
Polyoxyethylene octyldodecyl ether	5
Cold-sensation perfume 2	5
Bitterness agent (desodium benzoate)	0.005

Manufacturing Method

Part A was heated and dissolved at 80°C, after which part B was added and the system was cooled. At the point when the system reached 60°C, the uniformly dissolved part C was added under stirring, and the solution thus obtained was poured into a vessel and then allowed to stand, cool to room temperature, and solidify, which gave a gelled aromatic.

Working Example 4

Body soap

Propylene glycol	2.0
Ethylene glycol distearate	2.0
Coconut oil fatty acid diethanolamide	6.0
Sodium dodecan-1,2-diol acetic acid ether	2.0
Polyoxyethylene lauryl ether sodium sulfate	7.5
Polyoxyethylene lauryl ether sulfuric acid triethanolamine	3.0
Coconut oil fatty acid methyltaurine sodium	3.0
Coconut oil fatty acid amide propyl betaine	1.0

Citric acid (50% solution)	0.5
Sodium citrate	1.0
Sodium benzoate	appropriate amount
Disodium edetate	appropriate amount
Cold-sensation perfume 3	0.5
Pure water	balance

Working Example 5

Antiperspirant aerosol cosmetic

A. Powder component	
Aluminum hydroxychloride	3 mass%
Zinc oxide	2
Silica	3
Cornstarch	0.1
Calcium stearate	0.1
B. Oil phase component	
Dimethylpolysiloxane	2
Cetyl octane	2
POE (10) POP (10) dimethyl ether (random copolymer)	10
Sorbitan oleate	1
Antioxidant	appropriate amount
Cold-sensation perfume 4	0.05
C. Propellant	

Liquefied petroleum gas	balance

Manufacturing Method and Assessment

The powder (A) and the oil phase component (B) were mixed, and the propellant (C) was charged into this mixture, which gave an antiperspirant aerosol cosmetic.

Working Example 6

Emulsion

Dimethylpolysiloxane	2
Behenyl alcohol	1
Batyl alcohol	0.5
Glycerin	5
1,3-butylene glycol	7
Erythritol	2
Hydrogenated oil	3
Squalane	6
Tetra-2-ethylhexanoic acid pentaerythritol	2
Polyoxyethylene glyceryl isostearate	1
Polyoxyethylene glycerin monostearate	1
Potassium hydroxide	appropriate amount
Sodium hexametaphosphate	0.05
Phenoxyethanol	appropriate amount
Carboxyvinyl polymer	0.1
Warm-sensation perfume 1	0.05

Purified water	balance

Working Example 7

Moisturizing cream

Liquid paraffin	10
Dimethylpolysiloxane	2
Glycerin	10
1,3-butylene glycol	2
Erythritol	1
Polyethylene glycol 1500	5
Squalane	15
Tetra-2-ethylhexanoic acid pentaerythritol	5
Potassium hydroxide	0.1
Sodium hexametaphosphate	0.05
Tocopherol acetate	0.05
p-Hydroxybenzoic acid ester	appropriate amount
Hydroxypropyl methyl cellulose	0.3
Polyvinyl alcohol	0.1
Carboxyvinyl polymer	0.2
Acrylic acid-alkyl methacrylate copolymer (Pemulen TR-2)	0.1
Warm-sensation perfume 2	0.03
Purified water	balance

Working Example 8

Foundation

Dimethylpolysiloxane	15
Decamethylcyclopentanesiloxane	20
Polyoxyethylene-methylpolysiloxane copolymer	5
High-molecular weight amino-modified silicone	0.1
Glycerin	5
1,3-butylene glycol	10
Palmitic acid	0.5
Macadamia nut oil fatty acid cholesterol	0.1
Distearyldimethylammonium chloride	0.2
Alkyl-modified silicon resin-covered yellow iron oxide	2
Alkyl-modified silicon resin-covered red iron oxide	1
Alkyl-modified silicon resin-covered black iron oxide	0.3
Alkyl-modified silicon resin-covered titanium oxide	10
Alkyl-modified silicon resin-covered talc oxide	1.5
Silicone-covered fusiform titanium oxide	3
Sodium L-glutamate	0.5
DL-α-tocopherol acetate	0.1

p-Hydroxybenzoic acid ester	appropriate amount
Methylbis(trimethylsiloxy)silylisopentyl trimethoxycinnamate	0.1
Dimethyldistearylammonium hectorite	1.5
Spherical nylon powder	1
Warm-sensation perfume 3	0.02
Purified water	balance

Working Example 9

Gelled aromatic

Dipropylene glycol	5
Propylene glycol	5
POE 60 hydrogenated castor oil	4
POE 15 lauryl ether	4
Kappa type carrageenan	1.4
Iota type carrageenan	0.6
Hydrophobic modified polyether urethane (Adekanol GT-700)	2
pH regulator: sodium citrate	0.5
Warm-sensation perfume 4	5
Purified water	balance

Working Example 10

Hair shampoo

Cation-modified locust bean gum*1	0.3
Cation-modified fenugreek gum*2 [4]	0.2
Coconut oil fatty acid amide propyl betaine	5
POE (2) lauryl ether sodium sulfate	4.5
Propylene glycol laurate	2.1
N-cocoyl-N-methyltaurine-N'-methyltaurine sodium	6
Ethylene glycol distearate	1.5
Oleic acid monoglyceride	0.1
Silicone emulsion*3	1.5
Sodium benzoate	0.3
Phenoxyethanol	0.1
Warm-sensation perfume 3	0.03
EDTA-2Na·2H_2O	0.05
Tap water	balance

*1: Catinal CLB-100 (made by Toho Chemical)

*2: Catinal CF-100 (made by Toho Chemical)

*3: Dimethylsilicone emulsion BY22-007 (containing 50 mass% dimethylpolysiloxane; made by Toray-Dow Corning)

Working Example 11

Hair rinse, treatment

High-polymerization dimethylsiloxane-methyl(aminopropyl)siloxane copolymer	0.2

Hydrogenated rape oil alcohol	3
Glycerin	3.5
3-methyl-1,3-butanediol	5
Hydroxystearic acid	0.5
Cetyl 2-ethylhexanoate	1
Isononyl isononanate	0.5
Sensomer CI-50 (made by Nalco)	0.2
Stearic acid dimethylaminopropylamide	1
Merquat 550 (made by Calgon)	1
L-glutamic acid	0.5
Phenoxyethanol	0.5
Lecithin	0.1
Cold-sensation perfume[5]	0.05
Pure water	balance
Coloring	appropriate amount

FIG. 1

Without aroma

unscented cream (model composition)

cotton (unscented)

With aroma

cotton (scented)

unscented cream (model composition)

FIG. 2

Relationship between cream temperature sense brought about by aroma and the "freshness of the skin"

Cream temperature sense

Makes skin feel fresh

Makes skin feel somewhat fresh

Can't say either way

Does not make skin feel very fresh

Does not make skin feel fresh

Cold

Somewhat cold

Can't say either way

Somewhat warm

Warm

FIG. 3

Relationship between cream temperature sense brought about by aroma and the "moistness of the skin"

Cream temperature sense

Makes skin feel moist

Makes skin feel somewhat moist

Can't say either way

Does not make skin feel very moist

Does not make skin feel moist

Cold

Somewhat cold

Can't say either way

Somewhat warm

Warm

FIG. 4

Natural

Rich (feminine)

Sharp

Tender

light spreading

transparent

bright

fresh

bracing

moist

mild

sweet

heavy spreading

sultry

thick

FIG. 5

1. very warm

2. warm

3. somewhat warm

4. can't say either way

5. somewhat cold

6. cold

7. very cold

FIG. 7

Sense of warmth or cold inside the box

Peppermint

Bergamot

Vanillin

1. very warm

2. warm

3. somewhat warm

4. can't say either way (same as with no aroma)

5. somewhat cold

6. cold

7. very cold

FIG. 8

Aroma intensity inside the box

Peppermint

Bergamot

Vanillin

1. Do not sense aroma

2. Sense aroma, but faintly

3. Aroma just the right strength

4. Aroma too strong